



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/760,503	01/21/2004	Taketo Fukuro	OKI. 609	1486

20987 7590 12/18/2006

VOLENTINE FRANCOS, & WHITT PLLC  
ONE FREEDOM SQUARE  
11951 FREEDOM DRIVE SUITE 1260  
RESTON, VA 20190

EXAMINER
----------

ERDEM, FAZLI

ART UNIT	PAPER NUMBER
----------	--------------

2826

DATE MAILED: 12/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/760,503

Applicant(s)

FUKURO, TAKETO

Examiner

Fazli Erdem

Art Unit

2826

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 20 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-7 and 9-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-7, 9, 10 and 17-20 is/are allowed.
- 6) ☒ Claim(s) 11-14 and 16 is/are rejected.
- 7) ☒ Claim(s) 15 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

  
THOMAS DICKEY  
PRIMARY PATENT EXAMINER

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_

- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Allowable Subject Matter***

1. Claims 1-7, 9 10 and 17-20 allowed.
2. Claim 15 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 11-14 and 16 rejected under 35 U.S.C. 103(a) as being unpatentable over Arase (JP 0406993) in view of Tu et al. (6,294,426).

Regarding Claim 11, Arase discloses a silicon substrate 11, a N<sup>+</sup> impurity region 13, formed in the silicon substrate, the impurity region having only an upper region exposed from the silicon substrate 11, a first insulating film 14 formed on the silicon substrate, the first insulating film including a first opening 16 over the upper surface of the impurity region 13, a P<sup>+</sup> polysilicon plug 17a formed in the first opening in contact with the impurity region and on an upper surface of the first insulating film, a second insulating film (not labeled) covering the gate structure 15) on sidewalls and upper right and left corner surfaces of the polysilicon plug. (Technically, examiner considers the insulating layer to cover the upper surfaces of the polysilicon plug, since technically it

covers the upper left and right corners of the polysilicon plug 17a. Applicant is suggested to include a language related to the shape of the polysilicon plug, i.e. reverse L-shaped plug as shown in the Figures of the current application). Arase fails to disclose the second insulating layer to cover upper surfaces of the polysilicon plug. However, Tu et al. disclose a method for fabrication capacitor where in Fig. 13, polysilicon plug 15 is connected to diffusion layer and an insulating layer 16 covers the upper surface of the polysilicon plug.

It would have been obvious to one of having ordinary skill in the art at the time the invention was made to include the required covering of the upper surfaces, in addition to the left and right corner surfaces, of the polysilicon plug, with insulating layer in Arase as taught by Tu et al. in order to provide a better protection for the polysilicon plug.

Regarding Claim 12, Arase discloses the metal layer of Aluminum in Fig. 1.

Regarding Claim 13, Arase et al. discloses that the cross sectional areas of the diffusion layer and the area under the metal layer, i.e. second opening, to be substantially equal to each other as shown in Fig. 1.

Regarding Claim 14, impurity concentration of the diffusion layer 13 and the polysilicon plug 17 are substantially equal to each other in Arase Fig. 1.

Regarding Claim 16, in Arase, Fig. 1, the diffusion layer is N type and the polysilicon plug is P type as shown in Fig. 1.

### ***Conclusion***

Art Unit: 2826

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fazli Erdem whose telephone number is (571) 272-1914. The examiner can normally be reached on M - F 8:00 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (571) 272-1705. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

FE  
December 4, 2006